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**Do teachers consider advice: an investigation of the acceptance of
(Brunswik' based) expert models within the educational field**

Kaufmann, Esther ; Budescu, David V

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Foreword

Many thanks to all authors for their contributions!

This newsletter is dedicated to Kenneth R. Hammond (1917-2015), who would celebrate his 100th birthday this year.

The November 2017 Brunswik meeting will honor Hammond's work and is covered in this newsletter, where you'll find the agenda with abstracts of each presentation. In memory of Ken Hammond, we wished to interview previous New Investigator Award Winners of the Society. The interviews will give you an insight into how this award has shaped the careers of the interviewees and what they recommend to young researchers with the goal of being honored with a New Investigator Award at a later date.

As in previous years, you will find contributions describing on-going work within Brunswik's research tradition in this newsletter. The contributions demonstrate Brunswik's breadth within the judgment and decision approach as well as methodological topics. The contributions address the representative design approach as well as Brunswik's symmetry concept.

We hope that our newsletter not only inspires young researchers, but also promotes the exchange on Brunswik research between generations of researchers. The upcoming Brunswik-Hammond meeting provides opportunities for such conversations. The newsletter team is very much looking forward to this event and would like to specially thank the organization team – Mandeep Dhami and Jeryl Mumpower.

Finally, we would like to mention that the editorial team of the Brunswik Society Newsletter celebrates a jubilee: It has successfully published the newsletter for five years. New editorial members are greatly welcomed. If you're interested in supporting these efforts and wish to be involved in the next Brunswik Society Newsletter, please let us know by e-mail (esther.kaufmann@gmx.ch). Thank you.

Sincerely,

Esther Kaufmann, James A. Athanasou and Robert M. Hamm

Thank you to Tom Stewart, the webmaster of the Brunswik Society, for providing web access to the Newsletter.

Contributions

Monte Carlo Simulation of Lens Model with Different Task Characteristics

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We do not know whether lens model is insensitive to the change in task characteristics. We tested this using Monte Carlo simulation and checked whether lens model can detect different judgment policies and lens model parameters when - a) different regression models (linear and logistic) and b) varying cue cardinality is used to capture human judgment. We simulated 2 different judgment policies (uniform with bounds and triangle distribution with bounds) on a set of actual energy usage data from the restaurant industry using a set of 9 cues. We found that the standard error of the achievement coefficient for all combinations was found to be close to 0. This shows that lens model is insensitive to the change in different regression models and varying cue cardinality.

Trait Perception Accuracy and Acquaintance Within Groups: Tracking Accuracy Development

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Previous work on trait perception has evaluated accuracy at discrete stages of relationships (e.g., strangers, best friends) in a laboratory or survey setting. A relatively limited body of literature has investigated changes in accuracy as acquaintance within a dyad or group increases in an ecologically-representative environment.

Inspired by Brunswik's (1956; see also Hammond & Stewart, 2001) notion of representative design and Funder's (1995, 1999) stage model of interpersonal perception accuracy, small groups of initially unacquainted individuals experienced a set of typical real-life activities, some of which are rarely examined by social psychologists, that were carefully selected on the basis of their presumed relevance to the traits being assessed. A list of activities that were all done outside of the lab appears in Table 1.

Table 1

Ecologically Representative Experiences Designed to Increase Acquaintance over 10 Weeks

Instructions	Theoretically Relevant Traits	Sample Activity
Play a game.	Extraversion, Agreeableness	Played the card game UNO; played the Game of Life (a board game).
Get to know your group members.	Openness, Extraversion, Agreeableness	Socialized in the library café.
Share a meal.	Conscientiousness, Openness	Went to local restaurants; other groups ate at a group member's apartment potluck-style.
Clean something.	Conscientiousness, Neuroticism	Cleaned one participant's apartment; another group picked up trash in a public area.
Create a group logo.	Openness, Extraversion, Agreeableness	Drew a logo incorporating group characteristics; created a computer image representing the group.
Travel for at least 50 minutes.	Openness, Extraversion	Walked around campus; drove to the beach.
Debate something the group is polarized on.	Agreeableness, Extraversion	Discussed politics; held conversations about Star Wars vs. Star Trek.

In addition to these activities, each group of 5-7 individuals spent more than 30 hours in the lab with each other participating in a wide range of activities (e.g., engaging in an acting task, completing a puzzle, conversing). In this manner, we not only specified the number of hours participants were exposed to each other over the course of 10 weeks but defined explicitly what social situations and experiences constituted acquaintance. Furthermore, all of the ecologically representative activities were unsupervised, unmonitored, and held off-site, which required the groups to coordinate and manage themselves. This fostered all of the leadership and interpersonal processes involved in the formation and maintenance of small groups (Tuckman, 1965; Tuckman & Jensen, 1977). We reasoned these processes would be relevant to the expression of agreeableness and neuroticism to the extent groups faced inevitable coordination and scheduling problems.

This experimental design differed from typical studies where acquaintance is operationalized in terms of time. We argued as did others (Kenny, 1991; Kruglanski, 1989) that acquaintance defined in terms of time is inherently problematic for a number of reasons, most importantly because it neglects completely the variance due to social situations. The current methodology addressed this concern by explicitly operationalizing level of acquaintance according to a fixed set of different interpersonal contexts.

We calculated how accurately each participant judged others in their group on the big five traits across three distinct points within the acquaintance process: zero acquaintance, after a getting-to-know-you conversation, and after 10 weeks of the group activities described. Intuitively, one would expect that the amount of trait information acquired about a person must be orders of magnitude greater over the course of a relationship than the amount one gets when he or she first meets someone (i.e., a first impression). And this is what we tested.

Judgments of all five traits exhibited accuracy above chance levels after 10 weeks. An examination of the stability of impressions revealed that much of the revision in judgments occurred not over the course of the 10-week relationship as suspected, but between zero acquaintance and the getting-to-know-you conversation. But each trait showed a different pattern of accuracy gain.

The accuracy to judge another's extraversion revealed the most intuitive trend; Accuracy was apparent at zero acquaintance, increased after an initial conversation, and continued to increase throughout the 10-week period. Interestingly, however, the gain in accuracy that occurred in the first 5 minutes of meeting someone equaled the accuracy gained as a result of spending ten weeks with them doing all of the activities listed in Table 1.

Agreeableness and conscientiousness, on the other hand, appeared to be traits that were accurately judged only after experiencing a set of ecologically representative social activities. The most intriguing trends involve neuroticism and openness where accuracy gains appeared to max out after the first conversation people had with each other and showed little gains over the course of the relationship (see article for further explanation). Taken together, the striking lesson to be learned is how quickly and immediately accuracy was achieved and, for some traits, how relatively insensitive it is

to actual behavioral events and experiences shared with others. For some traits, first impressions appear to last.

To our knowledge, the standardized exposure of a carefully selected, content-valid sample of ecologically representative social situations to define relationship development has not yet been done. Terms like friend, best friend, and significant other are too vague to be used theoretically or in empirical studies. We believe that studies such as ours support the development of a taxonomy of relationships on the basis of a necessary and sufficient set of shared experiences. We propose that the employment of such a taxonomy will facilitate the accumulation of knowledge across studies investigating the perception of others and its accuracy throughout the course of relationships.

* This contribution for the Brunswick Society Newsletter contains a summary of and excerpts from the following article: Brown, J. A., & Bernieri, F. J. (2017). Trait perception accuracy and acquaintance within groups: Tracking accuracy development. *Personality and Social Psychology Bulletin*, 43(5), 716–728. doi:10.1177/0146167217695557

References:

- Brunswik, E. (1956). *Perception and the representative design of psychological experiments*. Berkeley: University of California Press.
- Funder, D. C. (1995). On the accuracy of personality judgment: A realistic approach. *Psychological Review*, 102(4), 652–670. doi: 10.1037/0033-295X.102.4.652
- Funder, D. C. (1999). *Personality judgment: A realistic approach to person perception*. San Diego, CA: Academic Press.
- Hammond, K. R., & Stewart, T. R. (Eds.). (2001). *The essential Brunswik: Beginnings, explications, applications*. New York, NY: Oxford University Press.
- Kenny, D. A. (1991). A general model of consensus and accuracy in interpersonal perception. *Psychological Review*, 98(2), 155–163. doi: 10.1037/0033-295X.98.2.155
- Kruglanski, A. W. (1989). The psychology of being “right”: The problem of accuracy in social perception and cognition. *Psychological Bulletin*, 106, 395–409. doi: 10.1037/0033-2909.106.3.395
- Tuckman, B. W. (1965). Developmental sequences in small groups. *Psychological Bulletin*, 63(6), 384–399. doi: 10.1037/h0022100
- Tuckman, B. W., & Jensen, M. A. C. (1977). Stages of small group development revisited. *Group and Organizational Studies*, 2(4), 419–427. doi: 10.1177/105960117700200404

Ecological Validity as a Key Feature of External Validity in Research on Human Development

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“Recent technological advances in data collection methods and researchers’ ability to process large quantities of data have raised the question whether the behavioral sciences, including research on human development, have found a way to address the issue of ecological validity (EV) of study designs and research findings in a more satisfying way”. (p. 177) We highlight that our special issue of *Research in Human Development*, entitled „Ecological Validity in Research on Human Development“ (see Diehl, Wahl, & Freund, 2017) addresses Brunswik’s ecological validity concept and provides critical discussion of it. „According to Brunswik (1943, 1955), EV concerns the question of whether the stimuli included in a psychological experiment are a good representation of the organism–environment relation in the naturally occurring ecology. Brunswik considered this representation as crucial because psychological processes represent adaptations to stimuli in the natural environment and can only be validly tested if the stimuli are representative of this environment. He referred to the implementation of this approach as “representative design” (p. 178).

This article addresses the topic of ecological validity in research in human development across the life span. Although recent developments in study design, data collection methods, and data analysis techniques have greatly advanced researchers’ ability to collect large amounts of data on large groups of individuals in natural settings, it is important to approach these data with a reflective understanding of their ecological validity. Just because data were collected using everyday and familiar stimuli or ecological momentary assessment methods does not mean automatically that the ecological validity of these data is guaranteed and can go unquestioned.

References:

- Brunswik, E. (1943). Organismic achievement and environmental probability. *Psychological Review*, 50, 255–272.
- Brunswik, E. (1955). Representative design and probabilistic theory in a functional psychology. *Psychological Review*, 62, 193–217.
- Diehl, M., Wahl, H.-W., & Freund, A. (2017). Ecological validity as a key feature of external validity in research on human development. *Research in Human Development*, 14(3), 177–181.

An Applied Example of the Use of Representative Design in a Team Sport Scenario

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In many sporting contests, and particularly in team sports, competitors are often required to execute their skills in close proximity to one or more defenders. This typically requires the attacking players to adapt their movements in a functional manner, thereby allowing them to successfully achieve the desired outcome (Davids, Glazier, Araújo, & Bartlett, 2003; Rivilla-Garcia, Grande, Sampedro, & van den Tillaar, 2011; Rojas, Cepero, Oña, & Gutierrez, 2000). Yet, there is evidence to suggest that a sizeable proportion of practice time in sport is spent participating in activities that are not necessarily representative of the demands of the normal competitive environment, such as activities that do not involve an opponent (see Ford, Yates, & Williams, 2010; Partington & Cushion, 2013). This is in contrast to the framework of Brunswik's (1956) representative design. Brunswik's (1956) theory of representative design was adapted by Pinder, Davids, Renshaw, and Araújo (2011) as a framework to guide the design of practice in sport. The adaptation is underpinned by Brunswik's (1952) lens model and the concept of probabilistic functionalism (see also Brunswik, 1943, 1955, 1956; Pinder et al., 2011). Representative practice tasks can be designed by sampling key perceptual variables (or cues, as Brunswik termed them) that are commensurate with the target environment (Brunswik, 1943, 1955, 1956; Pinder et al., 2011). By sampling representative cues, it is likely that the available information is functional and the observed behaviour has a high degree of fidelity relative to the competition task (Brunswik, 1943, 1955, 1956; Pinder et al., 2011). By enhancing the representativeness of sports practice tasks, the intention is that skills acquired in practice will more likely generalise to competition (Hammond & Bateman, 2009; Hammond & Stewart, 2001; Pinder et al., 2011).

To explore behaviour in the presence and absence of a defender, and expand upon previous work in this area (e.g., Hughes, Watkins, & Owen, 2010; Rivilla-Garcia et al., 2011; Rojas et al., 2000; van der Wende, 2005), Gorman and Maloney (2016) analysed highly skilled basketball players as they executed different types of basketball shots under both defended (representative) and undefended (non-representative) practice tasks. The players performed 30 trials in both conditions, with six trials being performed across five different types of shot (i.e., free throw, 3-point shot, post move, pull-up jumper, and screen and curl cut). The results showed that in the presence of a defender, the players seemed to adapt their movements in a manner

that was aimed at reducing the likelihood of the defender blocking their shot. In general, the adaptations of the shooter included a higher jump, a faster catch and release of the ball, and a higher shooting arc on the ball. In addition, the degree of adaptation on the part of the shooter appeared to be aligned to the nature of the task. That is, for the shot types that provided a greater opportunity for the defender to perturb the shooter (e.g., the screen and curl cut which allowed the defender to be in close proximity to the shooter), the changes in player behaviours between the defended and undefended conditions tended to be more pronounced compared to shots where the defender was more constrained.

Brunswik's (1943, 1955, 1956; see also Pinder et al., 2011) notions of representative design and task sampling were the core theoretical principles that were used as the framework to contextualise the design and results of the study by Gorman and Maloney (2016). Clearly, practice tasks that occur in the presence of a defender (where suitable for the capability of the performer/s) are more likely to be representative of the target environment (i.e., competition) to which those practice tasks are designed to generalise (Brunswik, 1956; Hammond & Bateman, 2009; Hammond & Stewart, 2001; Pinder et al., 2011). Such tasks are more likely to enable the performer to associate the proximal cues (in this instance, the movements of the defender relative to the shooter) with distal events such as the likely movements of the defender (Araújo & Kirlik, 2008; Araújo, Davids, & Passos, 2007; Brunswik, 1943, 1956; Chow, Davids, Button, & Renshaw, 2016; Hammond & Bateman, 2009; Pinder et al., 2011). Similarly, the use of five different shot types highlighted Brunswik's (1943, 1955, 1956) notion of task sampling which advocates the sampling of tasks from the target environment (see also Hammond & Bateman, 2009; Hammond & Stewart, 2001). That is, the use of a sample of five different shot types provided a more representative test environment which allowed differences in player behaviours to be examined in relation to the nature of the different task constraints (e.g., shots where the defender was able to perturb the shooter to a greater extent) (Brunswik, 1943, 1955, 1956; Hammond & Bateman, 2009; Hammond & Stewart, 2001).

Brunswik's (1943, 1952, 1955, 1956) concepts provide a useful framework for not only contextualising the results and guiding in the design of research in the sports sciences, but to also help practitioners to design learning tasks that are more likely to benefit competitive performance (Pinder et al., 2011). It is hoped that future research in the sports sciences continues to apply Brunswik's (1943, 1952, 1955, 1956) work.

References:

- Araújo, D., Davids, K., & Passos, P. (2007). Ecological validity, representative design, and correspondence between experimental task constraints and behavioural setting: Comment on Rogers, Kadar, and Costall (2005). *Ecological Psychology*, 19, 69–78.
- Araújo, D., & Kirlik, A. (2008). Towards an ecological approach to visual anticipation for expert performance in sport. *International Journal of Sport Psychology*, 39, 157–165.
- Brunswik, E. (1943). Organismic achievement and environmental probability. *Psychological Review*, 50, 255–272.
- Brunswik, E. (1952). *The conceptual framework of psychology*. Chicago: University of Chicago Press.
- Brunswik, E. (1955). Representative design and probabilistic theory in a functional psychology. *Psychological Review*, 62, 193–217.
- Brunswik, E. (1956). *Perception and the representative design of psychological experiments* (2nd ed.). Berkeley: University of California Press.
- Chow, J. Y., Davids, K., Button, C., & Renshaw, I. (2016). *Nonlinear pedagogy in skill acquisition: An introduction*. London: Routledge.

- Davids, K., Glazier, P., Araújo, D., & Bartlett, R. (2003). Movement systems as dynamical systems: The functional role of variability and its implications for sports medicine. *Sports Medicine*, 33, 245–260.
- Ford, P. R., Yates, I., & Williams, A. M. (2010). An analysis of practice activities and instructional behaviours used by youth soccer coaches during practice: Exploring the link between science and application. *Journal of Sports Sciences*, 28, 483–495.
- Gorman, A. D., & Maloney, M. A. (2016). Representative design: Does the addition of a defender change the execution of a basketball shot? *Psychology of Sport and Exercise*, 27, 112–119.
- Hammond, K. R., & Bateman, R. A. (2009). Sport psychology as an instance of ecological psychology. *International Journal of Sport Psychology*, 40, 38–49.
- Hammond, K., & Stewart, T. (2001). Introduction. In K. Hammond, & T. Stewart (Eds.), *The essential Brunswik: Beginnings, explications, applications* (pp. 3–11). Oxford: Oxford University Press.
- Hughes, G., Watkins, J., & Owen, N. (2010). The effects of opposition and gender on knee kinematics and ground reaction force during landing from volleyball block jumps. *Research Quarterly for Exercise and Sport*, 81, 384–391.
- Partington, M., & Cushion, C. (2013). An investigation of the practice activities and coaching behaviors of professional top level youth soccer coaches. *Scandinavian Journal of Medicine & Science in Sports*, 23, 374–382.
- Pinder, R. A., Davids, K., Renshaw, I., & Araújo, D. (2011). Representative learning design and functionality of research and practice in sport. *Journal of Sport & Exercise Psychology*, 33, 146–155.
- Rivilla-Garcia, J., Grande, I., Sampedro, J., & van den Tillaar, R. (2011). Influence of opposition on ball velocity in the handball jump throw. *Journal of Sports Science & Medicine*, 10, 534–539.
- Rojas, F. J., Cepero, M., Oña, A., & Gutierrez, M. (2000). Kinematic adjustments in the basketball jump shot against an opponent. *Ergonomics*, 43, 1651–1660.
- van der Wende, K. (2005). *The effects of game specific task constraints on the outcome of the water polo shot (Masters thesis)*. Auckland, New Zealand: Auckland University of Technology.

**Purposeful Collaboration in Analyzing Educational Research Data
to Improve Inclusion in Public Schools**

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In a recently published study, we explicitly applied Brunswik's Lens model (Brunswik, 1955) to justify our collaborative approach to the analysis of attitudinal data, specifically regarding inclusion (Gregory, McCoy, Baker, & Fedigan, 2016). Each of the authors held disparate roles as educational leaders, but collectively analyzed the same set of data and crafted recommendations for practice. As leaders in our varying roles (assistant principal, principal, assistant superintendent, professor, and public school board member), our individual analyses were impacted not only by our past experiences (distal stimuli) but also through the lens of the current events in our roles. The integration of our differing analyses of the same data set (proximal stimulus) engendered a deeper treatment of these data than any one of the authors could have offered on her own.

The role of an educational leader can bring a set of challenges that may be viewed as overwhelming. This research focused specifically on the attitudes of educators towards the inclusion of students with mild to moderate disabilities and how leaders can enhance professional development experiences by tailoring these experiences to teacher and school level characteristics. School leaders have a moral, legal and social mandate, which dictates daily performance (Honig, 2009). In an era of restricted budgets systems have a multitude of competing needs for limited resources. The challenge for the leader is to access needed resources and use them effectively, in an environment of high accountability (Sergiovanni, 1987; Tatto, Savage, Liao, & Marshall, 2016).

Why Probabilistic Functionalism?

Petrinovich (1979) argues that behavioral systems need to be described in a way that allows their complexities and "dynamic interplay to express itself" (p. 375). Public schools do not lack complexity, the art and craft of teaching diverse learners exemplifies this labyrinthine effort. Every person interacts with their environment continually; each sends and receives signals both consciously and subconsciously. This feedback that the person receives from the environment is filtered, judged and either accepted or dismissed (Day & Gregory, 2016). Whether an individual intends to or not, they sift "stimuli, translating them in to 'meanings,' and acting in a constant interaction with a dynamic world" (Petrinovich, 1979, p. 378). Because the barrage of stimuli is endless, the individual has to constantly filter and determine which stimuli are the trustworthiest.

Each judgment depends on limited information, and on the estimated probability that the information is useful. Once information has been discarded, it is no longer available to be a part of future judgments as to the value of other stimuli. So, each

earlier conscious or subconscious decisions about the value of a past stimulus impacts all future decisions. There are many appropriate responses to a stimulus, and in each, an expectation exists that a person will choose a response that moves them towards a future goal. In the current study, all of the researchers are educational leaders with a commitment to improving the educational outcomes of all students, including those with exceptionalities.

Wolf (2005) concluded that both the limitations and strengths of Brunswik's lens model are integrated in its process and the more general probabilistic functionalism theory. A person "is constantly engaged in an active process of weighing the dependability of cues, compromising between conflicting conclusions about what they mean and judging the probable efficacy of different molecular response" (Tyler, 1981, p. 14). Since the person makes some of these judgments without even being aware of them, all the decision-making is based on less than perfect information. In this respect, the varying roles of the authors impacted and limited the way each viewed the data set. By purposefully aggregating all the analyses, the team of researchers mitigated this limitation and was able to make recommendations for educational leaders with greater confidence that the suggestions would be of use to educational leaders at many levels.

References:

- Brunswik, E. (1955). Representative design and probabilistic theory in a functional psychology. *Psychological Review*, 62(3), 193–217. <https://doi.org/10.1037/h0047470>
- Day, D. V., & Gregory, J. L. (2016). Mindfulness as a prerequisite to effective leadership; exploring the constructs that foster effective communication. *NERA Conference Proceedings 2016*, 2011–2013.
- Gregory, J. L., McCoy, T., Baker, M., & Fedigan, A. (2016). Using educator characteristics on attitudes toward inclusion to drive professional development. *Journal of Advances in Education Research*, 1(1), 20–31. <https://doi.org/10.22606/jaer.2016.11003>
- Honig, M. I. (2009). No small thing: School district central office bureaucracies and the implementation of new small autonomous schools initiatives. *American Educational Research Journal*, 46(2), 387–422. <https://doi.org/10.3102/0002831208329904>
- Petrinovich, L. (1979). Probabilistic functionalism: A conception of research method. *American Psychologist*, 34(5), 373–390. <https://doi.org/10.1037/0003-066X.34.5.373>
- Sergiovanni, T. (1987). The theoretical basis for cultural leadership. In L. T. Sheive & M. B. Schoenheit (Eds.), *Leadership: Examining the elusive. 1987 Yearbook of the association for supervision and curriculum development* (pp. 116–129). Alexandria, VA: Association for Supervision & Curriculum Development. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.942.1824&rep=rep1&type=pdf#page=120>
- Tatto, M., Savage, C., Liao, W., & Marshall, S. (2016). The emergence of high-stakes accountability policies in teacher preparation: An examination of the US department of education's proposed regulations. *Education Policy Analysis*, 24(21). Retrieved from <http://eric.ed.gov/?id=EJ1091937>
- Tyler, L. (1981). More stately mansions-psychology extends its boundaries. *Annual Review of Psychology*, 32, 1–20.
- Wolf, B. (2005). *Brunswik's original lens model*. University of Landau, Germany. Retrieved from <https://pdfs.semanticscholar.org/029a/b609e4d2287ce3e0b905c5d9227e329e4a95.pdf>

**Logistic and Hybrid Lens Models Applied to Physician Decision
Whether to Refer for Possible Cancer**

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When the judgment and/or the criterion are dichotomous, application of linear regression is technically inappropriate. A logistic lens model is available. This year, Hamm and Yang (2017) compared the performance of logistic regression with the usual linear regression for the same dichotomous judgments, and found some slight advantages from using the logistic. Beckstead (2017) also used the logistic lens model formula in comparing individual judges' continuous and categorical (binary) judgments about the same stimulus cases.

With funding from Cancer Research UK, Kostopoulou and colleagues are conducting studies to investigate sources of variability in urgent referral for suspected cancer. They are collecting data from UK GPs (family physicians), which they are analyzing using methods from Signal Detection Theory. These data provide another opportunity to compare alternative forms of lens models. We will describe the many comparisons that this dataset allows.

In one such study by Kostopoulou and colleagues, over 200 GPs each read over 40 hypothetical case descriptions of patients with symptoms that might suggest cancer, and stated whether they would refer each patient urgently for prompt assessment or not. The criterion for each case could be the patient's continuous-scaled cancer risk (estimated by the research team based on published evidence), or the dichotomous decision to refer for urgent assessment (or not), based on the risk exceeding a specified threshold. Thus, for each GP it is possible to calculate a logistic lens model (BeBj: Binary Ecology, Binary Judgment) or a hybrid model (CeBj: Continuous Ecology, Binary Judgment). One could also use the linear regression approximation, producing 4 models with technically inappropriate methods (Ce*Bj, BeCj*, Ce*Cj*, and CeCj*, where the asterisk indicates a linear model used to predict a dichotomous variable).

Assuming GPs think alike, at least within reasonable subsets, it is also possible to analyze group judgments. This can provide both a continuous group judgment variable for each stimulus case (the vote count for referral) and a dichotomous group judgment (the majority decision whether to refer). In analyzing the accuracy of group

judgments, we can compare four fully technically appropriate lens models: Logistic (BeBj), Hybrid (BeCj and CeBj), and Linear (CeCj).

We will explore the usefulness of these various forms of lens model methods for understanding differences between GP groups, such as those with different number of years in practice, or those who work in clinics that refer many or few patients for urgent cancer assessment. We will also look for similarities or complementarities with the results from the signal detection analysis (Cheyne et al., 2012; Dalglish, Shanteau, & Park, 2010).

References:

- Beckstead, J. W. (2017). The bifocal lens model and equation: Examining the linkage between clinical judgments and decisions. *Medical Decision Making*, 37(1), 35–45. doi:10.1177/0272989X1667419627765897
- Cheyne, H., Dalglish, L., Tucker, J., Kane, F., Shetty, A., McLeod, S., & Niven, C. (2012). Risk assessment and decision making about in-labour transfer from rural maternity care: A social judgment and signal detection analysis. *BMC Medical Informatics Decision Making*, 12, 122. doi:10.1186/1472-6947-12-122
- Dalglish, L. I., Shanteau, J., & Park, A. (2010). Thresholds for action in judicial decisions. In D. E. Klein & G. Mitchell (Eds.), *Psychology of Judicial Decision Making* (pp. 165–183). New York, NY: Oxford University Press.
- Hamm, R. M., & Yang, H. (2017). Alternative lens model equations for dichotomous judgments about dichotomous criteria. *Journal of Behavioral Decision Making*, 30(2), 527–532. doi:10.1002/bdm.1969

**Using the Lens Model to Examine the Accuracy of
Self-Esteem Judgments at Zero Acquaintance**

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Brunswick's The personality trait self-esteem refers to an individual's subjective evaluation of his or her personal worth (Donnellan, Trzesniewski, & Robins, 2011) and has been shown to influence a variety of important life outcomes in the domains of health, work, and social relationships (e.g., Orth, Robins, & Widaman, 2012). Perceptions of close other individuals' level of self-esteem play an important role in existing social relationships (Cameron, MacGregor, & Kwang, 2013) and research has provided evidence that romantic partners and friends can judge each other's self-esteem quite accurately (e.g., Kilianski, 2008; MacGregor, Fitzsimons, & Holmes, 2013; Vazire, 2010; Zeigler-Hill, Besser, Myers, Southard, & Malkin, 2013). Self-esteem impressions appear to be relevant not only in existing relationships, but also for the formation of new social bonds, as people may use these impressions to gauge a stranger's actual worth and standing on valued traits and characteristics (e.g., Cameron et al., 2013; Zeigler-Hill et al., 2013; Zeigler-Hill & Myers, 2011). Previous studies (cf. Kilianski, 2008; Naumann, Vazire, Rentfrow, & Gosling, 2009; Yeagley, Morling, & Nelson, 2007) have provided an inconsistent pattern of findings regarding the important question of whether, and if so, why people (i.e., observers) can accurately detect individuals' level of self-esteem when still unacquainted (i.e., zero acquaintance).

In our own research (Hirschmüller, Schmukle, Krause, Back, & Egloff, in press), we aimed to reconcile inconsistent results of these previous studies (Kilianski, 2008; Naumann et al., 2009; Yeagley et al., 2007) and comprehensively investigated the level of accuracy of self-esteem judgments at zero acquaintance and the underlying behavioral processes using lens model (Brunswick, 1956) analyses. To this end, ninety-nine participants (77 female, mean age = 23.5 years) were videotaped in short self-introductory situations (mean duration = 23s, *SD* = 7.7). Based on these short video sequences, forty unacquainted observers (20 female, mean age = 23.9 years) judged participants' self-esteem. Participants' self-esteem self-reports and reports by well-acquainted informants of participants' self-esteem were used as accuracy criteria. In addition, groups of independent and trained cue coders assessed a number of behavioral cues perceivable in the videotaped introductory situation. Cue ratings were aggregated into cue aggregates reflecting a refined appearance, physical attractiveness, nonverbal expressiveness, nonverbal self-assuredness, vocal warmth, vocal self-assuredness, and self-assured verbal content.

Our results showed that participants' self-esteem could be inferred quite accurately by strangers: Self-esteem judgments by strangers correlated both with self-reported ($r=.31$, $p=.002$) and informant-reported self-esteem ($r=.21$, $p=.040$) of participants. Further, the level of accuracy in self-esteem judgments could be

explained with lens model analyses. Self-esteem self-reports and informant reports predicted nonverbal and vocal friendliness, both of which predicted observers' self-esteem judgments. In addition, observers' level of zero-acquaintance accuracy in inferring informant-reported self-esteem was mediated by the utilization of participants' physical attractiveness. Besides relying on valid behavioral information to judge strangers' self-esteem, observers inappropriately used invalid behavioral information reflecting nonverbal, vocal, and verbal self-assuredness. In sum, our findings show that strangers can quite accurately infer individuals' self-esteem based on a self-presentational situation.

References:

- Brunswick, E. (1956). *Perception and the representative design of psychological experiments*. Berkeley: University of California Press.
- Cameron, J., MacGregor, J., & Kwang, T. (2013). Badge of honor or mark of shame: Self-esteem as an interpersonal signal. In V. Zeigler-Hill (Ed.), *Self-esteem: Current issues in social psychology* (pp. 145–162). New York: Psychology Press.
- Donnellan, M. B., Trzesniewski, K. H., & Robins, R. W. (2011). Self-esteem: Enduring issues and controversies. In T. Chamorro-Premuzic, S. von Stumm, & A. Furnham (Eds.), *The Wiley-Blackwell handbook of individual differences* (pp. 718–746). New York: Wiley-Blackwell.
- Hirschmüller, S., Schmukle, S. C., Krause, S., Back, M. D., & Egloff, B. (in press). Accuracy of self-esteem judgments at zero acquaintance. *Journal of Personality*.
- Kilianski, S. E. (2008). Who do you think I think I am? Accuracy in perceptions of others' self-esteem. *Journal of Research in Personality*, 42, 386–398.
- MacGregor, J. C. D., Fitzsimons, G. M., & Holmes, J. G. (2013). Perceiving low self-esteem in close others impedes capitalization and undermines the relationship. *Personal Relationships*, 20, 690–705.
- Naumann, L. P., Vazire, S., Rentfrow, P. J., & Gosling, S. D. (2009). Personality judgments based on physical appearance. *Personality and Social Psychology Bulletin*, 35, 1661–1671.
- Orth, U., Robins, R. W., & Widaman, K. F. (2012). Life-span development of self-esteem and its effects on important life outcomes. *Journal of Personality and Social Psychology*, 102, 1271–1288.
- Vazire, S. (2010). Who knows what about a person? The self-other knowledge asymmetry (SOKA) model. *Journal of Personality and Social Psychology*, 98, 281–300.
- Yeagley, E., Morling, B., & Nelson, M. (2007). Nonverbal zero-acquaintance accuracy of self-esteem, social dominance orientation, and satisfaction with life. *Journal of Research in Personality*, 41, 1099–1106.
- Zeigler-Hill, V., Besser, A., Myers, E. M., Southard, A. C., & Malkin, M. L. (2013). The status-signaling property of self-esteem: The role of self-reported self-esteem and perceived self-esteem in personality judgments. *Journal of Personality*, 81, 209–220.
- Zeigler-Hill, V., & Myers, E. M. (2011). An implicit theory of self-esteem: The consequences of perceived self-esteem for romantic desirability. *Evolutionary Psychology*, 9, 147–180.

Extending Brunswick's Lens Model to Planning

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In an upcoming issue of the journal *Environment, Systems and Decisions*, Roland Scholz (in press) proposes how Brunswick's (1952) *Theory of Probabilistic Functionalism* (TPF) can be used to conceptualize and to aid planning in teams. After having laid out the basic principles of TPF, and after having linked it to current biophysical and neurological models of visual perception, Scholz discusses—based on his rich experience in urban, regional, and industrial planning, gained through numerous case studies that he and his colleagues conducted—how TPF can be used to understand and to support planning teams' endeavors to cope with the cognitive challenges of rapid sustainable transitions of complex systems. Scholz' article is laudable and deserves attention. It makes two important novel contributions, specifically, it builds two bridges. First, it links TPF to contemporary visual perception research, thereby not only filling a gap in Brunswick's own work (who, as Scholz points out, largely ignored biological aspects), but also a gap in visual perception research (that largely ignored the psychology of Egon Brunswick). Second, Scholz expands TPF to planning, thereby focusing on an area, namely action, that Brunswick was well aware of but did not pay as much attention to as he did to perception. Conversely, it seems fair to say that theoretical and practical approaches to planning have, so far, not paid much attention to Brunswick's framework of psychology.

Scholz (in press) serves as a target article for several commentaries, published along with his contribution in *Environment, Systems and Decisions*. In one of these commentaries, I discuss how his application of the lens model to planning can be extended in two ways (Hoffrage, in press). The first extension has been proposed by Leary (1987) who, inspired by Tolman and Brunswick (1935), complements the *perceptual lens* with a *behavioral lens*. The joint functioning of perception and behavior can then be portrayed as follows: The distal object, for instance a coffee mug, is perceived through some senses whose input can be conceived of as proximal cues. The integration of these cues – which can be modelled by the perceptual lens – ultimately leads to a representation of that object. Now the organism can do something with the mug, for instance put it in the dish washer to have a clean room, or use it to get and drink some more coffee. The repertoire and the selection of means to reach a certain goal can be modelled by the behavioral lens. Just as there are several cues the organism can use when perceiving objects, it can typically also choose among several means to reach a goal, and so the vicarious functioning of cues finds its correspondence in a vicarious functioning of means.

Leary's idea can be extended even further. Specifically, I propose how planning can be conceptualized as a process that unfolds in three steps (Figure 1). The first step can be understood with a model construction lens: A planning team builds a representation, that is, a model of a (distal) complex system, for instance a company

or a city. In a second step, modelled with a planning lens, the team contrasts its representation of the system (the *is*-state) with possible alternative states, and simulates how the *is*-state could be transformed into an *ought*-state. In a third step, modelled with an implementation lens, the team selects and implements a set of actions, thereby leaving the world of mental (or computer) simulation and entering the real world.

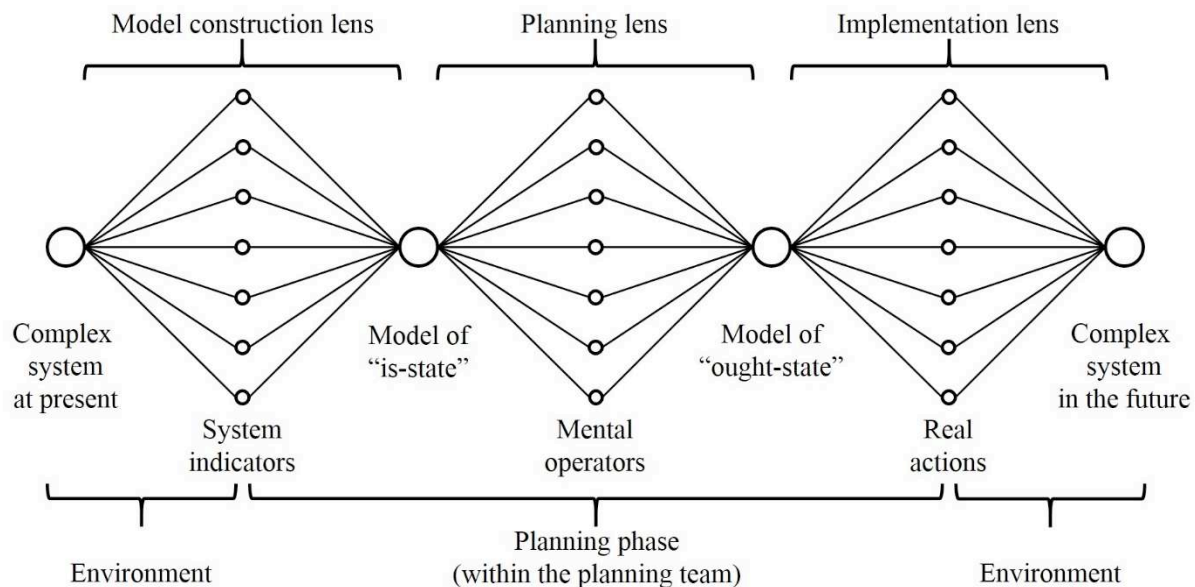


Figure 1. Extension of the lens model to planning (Figure adapted from Hoffrage, in press).

The commentary also discusses the relationship between the *is*-state and the *ought*-state (including the ways to get from one to the other; bottom-up and top-down), the usefulness of integrating research on group processes when modelling the planning phase, and ways to contrast the usefulness of various conceptualizations of the planning process on an empirical basis.

References:

- Brunswik, E. (1952). The conceptual framework of psychology. *Psychological Bulletin*, 49(6), 654–656.
- Hoffrage, U. (in press). From representation via planning to action: An extension of Egon Brunswik's Theory of Probabilistic Functionalism. *Environment, Systems and Decisions*. DOI: 10.1007/s10669-017-9660-7
- Leary, D. E. (1987). From act psychology to probabilistic functionalism: The place of Egon Brunswik in the history of psychology. In M. G. Ash & W. R. Woodward (Eds.), *Psychology in twentieth-century thought and society* (pp. 115–142). Cambridge University Press.
- Scholz, R. W. (in press). Managing complexity: from visual perception to sustainable transitions—contributions of Brunswik's Theory of Probabilistic Functionalism. *Environment, Systems and Decisions*. DOI 10.1007/s10669-017-9655-4
- Tolman, E. C., & Brunswik, E. (1935). The organism and the causal texture of the environment. *Psychological Review*, 42(1), 43–77.

Do Teachers Consider Advice?
An Investigation of the Acceptance of Brunswik-based Expert Models
within the Educational Field

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One potential way to improve judgments and decisions is to provide decision makers additional sources of advice and information, since judgments based on multiple opinions are usually more accurate (e.g., Galton, 1907, see also research on the wisdom of the crowd, e.g., Budescu & Chen, 2015). One way of achieving this goal is the so-called bootstrapping approach, that replaces a human judge with a model (e.g., an equation). The success of bootstrapping has been demonstrated in Paul Meehl's (1954) seminal work and was bolstered by the results of several meta-analyses (e.g., Grove et al., 2000). These meta-analyses did not explicitly consider bootstrapping models developed within the lens model approach. Would models developed within the lens model framework be as useful for human decision makers, as alternative sources of information? Several evaluations (e.g., Karelaia & Hogarth, 2009) within the lens model approach demonstrated that models usually outperform humans. Our previous work (Kaufmann & Wittmann, 2016) demonstrated this pattern in different domains (e.g., business, medical science), but especially within the educational field. This result suggests that there is a high potential for application of models in making decisions in the educational field.

To summarize, numerous studies within and outside the lens model framework showed the superiority of models compared to human judgment and decision-making. The success of models leads to the recommendation to develop and apply such models in our daily judgment and decision-making as an advice source for example within the educational field.

One question is whether such models are accepted by the professionals that are expected to benefit from them, such as teachers. During a short research visit funded by the Swiss National Science Foundation to Fordham University, US, we conducted a first online survey to check the acceptance of models within the educational field by US and Swiss (CH) teachers. Our sample consists of 195 teachers, most of them with more than 10 years of teaching experience, and 30 years old or older. One third are middle or secondary school teachers and two thirds are high school teachers. There are slightly more women than men. In our survey, we first introduced the term "computerized expert system" which represents the decision-making approach done by a model. We informed the teachers how a computerized expert system is making decisions (i.e., based on statistical analyses of large databases with information about many students). Then, we asked the teachers to

compare expert models and relevant human judges (in this case, school counsellors) on a variety of attributes (see Figure 1). Overall, our data revealed that school counsellors are preferred to expert models as an advice source, but we also found significant differences between the samples. On average, US teachers rated expert models higher than their Swiss counterparts on all dimensions, except on the objectivity of the two sources. It seems that the acceptance of expert models as an advice source is greater in the US than in Switzerland. In future work we plan to explore the generalizability of these results to other domains and other types of decisions.

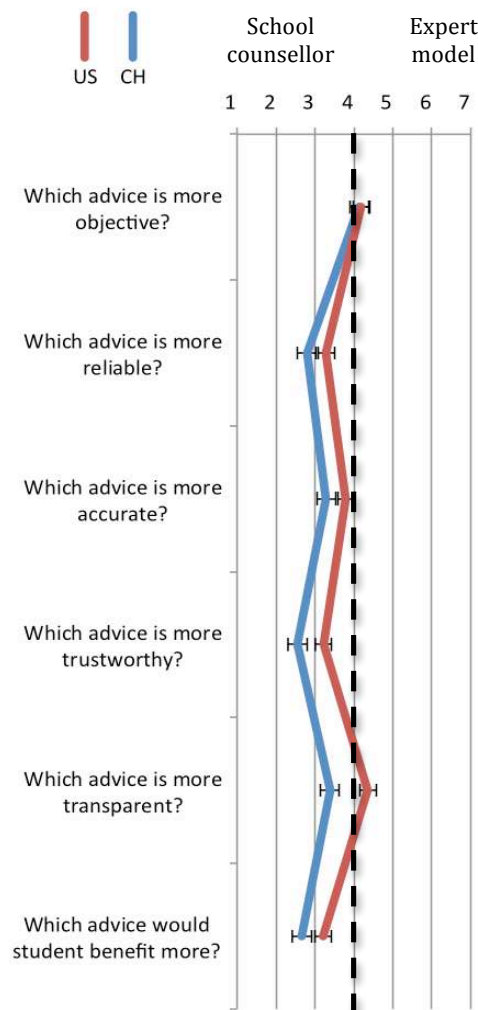


Figure 1. Comparison of the acceptance of advice sources (school counsellor vs. expert model).

References:

- Budescu, D. V., & Chen, E. (2015). Identifying expertise to extract the wisdom of crowds. *Management Science*, 61(2), 267–280. doi:10.1287/mnsc.2014.1909
- Galton, F. (1907). Vox populi. *Nature*, 1949(75), 450–451. doi:10.1038/075450a0
- Grove, W. M., Zald, D. H., Lebow, B. S., Snitz, B. E., & Nelson, C. (2000). Clinical versus mechanical prediction: A meta-analysis. *Psychological Assessment*, 12(1), 19–30.
- Karelaia, N., & Hogarth, R. (2008). Determinants of linear judgment: A meta-analysis of lens studies. *Psychological Bulletin*, 134(3), 404–426.
- Kaufmann, E., & Wittmann W. W. (2016). The success of linear bootstrapping models: Decision domain-, expertise-, and criterion-specific meta-analysis. *PLoS ONE* 11(6): e0157914.
- Meehl, P. E. (1954). *Clinical versus statistical prediction: A theoretical analysis and a review of the evidence*. Minneapolis, MN: University of Minnesota Press.

**Construct Validity of Complex Problem Solving:
The Impact of the Brunswik Symmetry Principle**

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Although complex problem solving (CPS) was introduced in psychological research four decades ago, the question whether CPS should be considered as a distinct cognitive construct independent of established cognitive constructs (e.g., fluid reasoning) is still discussed in the research literature (for a summary, see Kretzschmar, Neubert, Wüstenberg, & Greiff, 2016). Recent advancements in the assessment of CPS, the statistical methods, and sample sizes in a variety of studies published in the recent years mostly provided evidence for a distinct cognitive construct. In detail, discriminant validity with regard to established cognitive constructs (i.e., in particular fluid reasoning) and incremental validity with regard to academic achievements (i.e., incremental explanation of variance beyond established cognitive constructs) have been demonstrated in several studies.

However, a closer look at the studies revealed that the Brunswik symmetry principle (Wittmann, 1988) has been neglected most of the time (for a summary, see Kretzschmar, 2015). That means, very specific operationalizations of cognitive constructs (e.g., Raven's Test: figural reasoning solely based on matrices tasks) were used to analyze the relation with more comprehensive CPS tasks and broad operationalizations of academic achievements (e.g., grade point average, GPA). As we know from Wittmann's work (e.g., Wittmann, 1988; Wittmann & Süß, 1999), such "unfair comparisons" lead to biased results (i.e., substantially lower correlations even when the true correlation would be perfect). Therefore, my aim was to investigate the construct validity of CPS while respecting the Brunswik symmetry principle.

In the first study (Kretzschmar, Hacıtrjana, & Rascevska, 2017), we systematically modified the operationalization of fluid reasoning in order to investigate the discriminant validity of CPS. In line with previous research, we found substantial but significantly lower than 1.00 correlations if we used narrow operationalizations of fluid reasoning (i.e., based on one task type and task content). However, if we used broader operationalizations of fluid reasoning, then we found very strong correlations between fluid reasoning and CPS, which are usually considered as evidence for convergent validity instead of discriminant validity. Furthermore, if we used the broadest operationalization of fluid reasoning (i.e., based on three different task contents), then the correlation decreased again. These findings emphasized the importance of a symmetrical match between the operationalizations of the constructs under investigation.

In the second study (Kretzschmar et al., 2016), we investigated the incremental validity of CPS among other things. We applied a narrow operationalization of

intelligence (i.e. figural reasoning in line with previous CPS studies) and a broad operationalization of intelligence (i.e., following the recommendations of a good *g*; see Jensen & Wang, 1994) in order to examine whether CPS incrementally explains variance in academic achievement (i.e., GPA) beyond intelligence. In line with previous studies, we found evidence for the incremental validity of CPS if we used a narrow operationalization of intelligence. However, if we applied a broad operationalization of intelligence, then CPS did not explain variance in GPA beyond intelligence. Again, these findings highlighted the impact of the Brunswik symmetry principle: A comparison of constructs on different levels of aggregation (e.g., narrow intelligence ability vs. broad academic achievement) leads to reduced correlations (Wittmann, 1988) and, thus, it is easy to demonstrate (artificial) incremental validity for other abilities. However, a comparison of constructs on a symmetrical level leads to insights about the true correlations between constructs.

In summary, our research shows that the Brunswik symmetry principle is crucial for the construct validity of psychological constructs. Neglecting the Brunswikian symmetry and thus examining the relation between asymmetrical operationalizations of constructs leads to biased results. With regard to the question whether CPS should be considered as a distinct cognitive construct, I argue that most of the evidence for an independent CPS construct should be critically questioned under the light of the Brunswik symmetry principle. Thus, my recommendation is to consider CPS tests as modern operationalizations of established intelligence constructs.

References:

- Jensen, A. R., & Wang, L.-J. (1994). What is a good *g*? *Intelligence*, 18(3), 231–258. [https://doi.org/10.1016/0160-2896\(94\)90029-9](https://doi.org/10.1016/0160-2896(94)90029-9)
- Kretzschmar, A. (2015). Konstruktvalidität des komplexen Problemlösens unter besonderer Berücksichtigung moderner diagnostischer Ansätze [*Construct validity of complex problem solving with particular focus on modern assessment approaches*] (Doctoral dissertation). University of Luxembourg, Luxembourg. Retrieved from <http://hdl.handle.net/10993/22584>
- Kretzschmar, A., Hacatrljana, L., & Rascevska, M. (2017). Re-evaluating the psychometric properties of MicroFIN: A multidimensional measurement of complex problem solving or a unidimensional reasoning test? *Psychological Test and Assessment Modeling*, 59(2), 157–182.
- Kretzschmar, A., Neubert, J. C., Wüstenberg, S., & Greiff, S. (2016). Construct validity of complex problem solving: A comprehensive view on different facets of intelligence and school grades. *Intelligence*, 54, 55–69. <https://doi.org/10.1016/j.intell.2015.11.004>
- Wittmann, W. W. (1988). Multivariate reliability theory: Principles of symmetry and successful validation strategies. In J. R. Nesselroade & R. B. Cattell (Eds.), *Handbook of multivariate experimental psychology* (2nd ed., pp. 505–560). New York: Plenum Press.
- Wittmann, W. W., & Süß, H.-M. (1999). Investigating the paths between working memory, intelligence, knowledge, and complex problem-solving performances via Brunswik symmetry. In P. L. Ackerman, P. C. Kyllonen, & R. D. Roberts (Eds.), *Learning and individual differences: Process, trait and content determinants* (pp. 77–104). Washington: APA.

**The Perceived Predictors of Achievement in Management Students:
An Innovative Use of Lens Model**

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This empirical investigation attempts to delineate significant predictors of achievement as perceived by management students in India. Initially, seven dimensions were chosen on the basis of the current practices adopted in business schools. These include quiz (objective questions), thematic long questions, thematic short questions, individual project, group project, group presentations, and case analysis.

Method of Study

There were 85 management students randomly sampled from a well-organized management institute of Eastern India. There were 46 males and 39 females in the study. The age ranged from 21 to 26 years ($m = 23.1$, $SD = 2.3$).

Participants were presented with 35 pictorial profiles of students. Each profile depicted different magnitude of each of the seven dimensions. Participants had to look at each profile and indicate their subjective judgment separately for the stimulus student's academic and placement success, respectively. The magnitude of the dimensions was depicted by the height of the bar. The outcome judgment (academic success/ placement success) is indicated on a 20-point scale.

Results

Each participant indicated his or outcome judgment on a 20-point scale. In addition, participants were asked to apportion 100 marks across these seven dimensions, reflecting their relative importance. This was adopted to determine whether the participants were aware of the basis of their judgment.

Correlations were computed between magnitudes of a stimulus (dimension) and outcome judgments across profiles. The idiographic data were generated for each dimension and for everyone. Apart from the idiographic analysis, nomothetic comparisons across gender groups were also carried out.

The results indicated that all management students perceive case analysis ability as a significant factor in academic success and placement success. In addition, female students view individual project as a significant factor of academic success. In the context of placement success, female students regarded thematic questions and individual project as significant dimensions whereas male students viewed thematic long questions and group presentations as significant predictors.

Interestingly, a different priority order emerged when students were asked to apportion 100 marks across seven dimensions. It was shown that they consciously report group project (top-most choice) and quiz (the next choice) as predictors of both academic success and placement success. This implies that students are not aware of the bases of their judgment. There is a gap between what they think is the basis and what they adopt as the basis of decision making.

Discussion and Conclusion

The application of Brunswik's lens model in generating significant dimensions of success (academic as well as placement) as perceived by management students provides a useful mechanism. Because of the structural nature of the tool, it can be applied to a wide variety of cultural groups. The idiographic data are also very helpful for person to person counseling.

An interesting aspect of the study involves the gap between what people think to be the basis of their judgment. This aspect needs to be carefully considered when we analyze the nature of decision making process, especially in the context of uncertain environment.

Reference:

Sahoo, F. M., & Sahoo, K. (2017). The perceived predictors of achievement in management students: An innovative use of lens model. *Journal of the Indian Academy of Applied Psychology*, 43(1), 30–40.

Using Representative Design to Study Interruptions in Healthcare

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We recently used some principles of representative design (Brunswik, 1956) to prepare for a large-scale simulation study on the effects of workplace interruptions to Intensive Care Unit (ICU) nurses. Interruptions are viewed as a normal part of clinical practice, but there is concern that interruptions may lead to clinical errors. There is evidence from simple laboratory-based studies that interruptions cause errors, but currently there is minimal evidence of a direct causal relationship between interruptions and errors in healthcare contexts. We wished to test the conjecture that more workplace interruptions to nurses would lead to more errors in a simulated ICU setting.

Several challenges and constraints emerged as we were designing the study: (a) we needed to conduct a formal statistical power analysis to determine how many participants we would need to find an effect, but we did not want to reduce our potential pool of participants by recruiting ICU nurses for a pilot study; (b) technology, equipment, procedures, and policies were constantly changing within the ICU, making it difficult to keep the experimental scenarios up-to-date; and (c) the simulation room we planned to use was often hired out for training purposes. It was important to conduct pilot investigations to ensure that we were adequately prepared to run such a large-scale study, but we were unable to do so in the ICU simulator for the above reasons. Accordingly, we decided to move our piloting to the laboratory, using some of the principles of representative design to create an analogous laboratory study to the healthcare study.

The laboratory study had to be sufficiently similar to the healthcare study that we could use the findings of the former to guide the design of the latter, but sufficiently different that we would not encounter the same issues as noted above. The laboratory study had to involve a task that embodied the high-level properties of medication preparation and administration, and it had to be performed by professionals who regularly carry out this task.

The task of cocktail making fits the above requirements because it is similar in perceptual and cognitive properties to medication preparation and administration (see Table 1) and is performed by professionals (bartenders). To design the laboratory study, the major components of the healthcare study had to be designed first, so that we could map the former to the latter. We first designed the physical environment, scenario content, and interruptions to be used the healthcare study, and then mapped

these high-level components in the laboratory study. Table 2 provides examples of analogous interruptions from the two contexts.

Table 1

Examples of high-level similarities between medication preparation and administration and cocktail making

High-Level Similarities	Medication Preparation and Administration	Cocktail Making
Controlled substances	Medication	Alcohol
Perceptual motor skills	E.g., aspirating fluid bag	E.g., peeling lemon garnish
Multi-step procedures	Task with sub-steps that can be performed in different orders	Task with sub-steps that can be performed in different orders
Busy, noisy environments	Intensive Care Unit	Bar/nightclub
High demand on working memory	E.g., medication type and dose	E.g., alcohol type and amount

Table 2

Three examples of interruptions that occurred in each simulated context

Nurses in the ICU	Bartenders in a bar/nightclub
Phone call from doctor	Phone call from bar supervisor
Another nurse needs medication (but cannot leave patient)	Customer's order was forgotten and needs to be made
Another nurse needs medication checked against order	Another staff member needs to clarify prior cocktail orders

We conducted two laboratory studies and one healthcare study. The first laboratory study was a zero-interruptions condition to determine baseline error rates. Bartenders prepared several cocktails in a simulated bar setting. Then, field data about the increase in error rates with increases in interruptions from a study by Westbrook, Woods, Rob, Dunsmuir and Day (2010) were integrated with the bartenders' error data to calculate a statistical power analysis for a second laboratory study (see Santomauro & Sanderson, 2016). The second laboratory study was a between-participants design where a new sample of bartenders received 3 or 12 interruptions. Bartenders who were interrupted 12 times committed significantly more 'cocktail errors' than bartenders who were interrupted 3 times. These findings were used to calculate a statistical power analysis for the healthcare study.

In the healthcare study, nurses prepared and administered several intravenous medications (for a simulated patient manikin) in a simulated ICU setting. We found a similar pattern of results to the laboratory study: nurses who were interrupted 12 times committed significantly more clinical errors than nurses who were interrupted 3 times. Our findings suggest that the task of cocktail making was an appropriate analogue to medication preparation and administration, and that aspects of representative design can be used to create large-scale pilot studies to guide the preparation of field research without the use of resources that are difficult to acquire.

References:

- Brunswick, E. (1956). *Perception and the representative design of experiments* (2nd ed.). Berkeley, CA: University of California Press.
- Santomauro, C., & Sanderson, P. (2016). Conducting comparable research in parallel worlds: An interruptions case study. *Proceedings of the 60th Annual Meeting of the Human Factors and Ergonomics Society (HFES 2016)*. Washington, DC: 19-23 September.
- Westbrook, J. I., Woods, A., Rob, M. I., Dunsmuir, W. T. M., & Day, R. O. (2010). Association of interruptions with an increased risk and severity of medication administration errors. *Archives of Internal Medicine*, 170(8), 683–690.

25th International Meeting of the Brunswik Society, in Memory of Kenneth R. Hammond

9th November 2017

Vancouver Convention Centre West, Meeting Room 113
Vancouver, British Columbia, Canada

Agenda

09.00-09.30 Registration, tea/coffee, uploading presentations	
Morning session (Chair: Esther Kaufmann)	
09.30-09.45	Welcome and opening remarks (Jeryl Mumpower & Mandeep Dhami)
09.45-10.15	Kenneth R. Hammond's contributions to the study of judgment and decision making (Mandeep Dhami)
10.15-11.00	<i>Discussion of Hammond's Final, Unpublished Paper:</i> Confronting inductive inference (at last): Concepts from aeronautical engineering can lead to advances in social psychology (Zoe Lang) Remarks by Mike Doherty, Robin M. Hogarth, Elke Kurz-Milcke
11.00-11.15 COMFORT BREAK	
11.15-11.45	Using ecological sampling and representative design to evaluate a template to support the judgment processes of remote sensing analysts (Len Adelman)
11.45-12.15	Selective information sampling and in-group heterogeneity effect (Elizaveta Konovalova)
12.15-12.45	The gain of Brunswik-Hammond's research for meta-analysis: Teachers' judgment achievement as an example (Esther Kaufmann)
12.45-14.00 LUNCH (buffet for all registered participants)	
Afternoon session (Chair: Len Adelman)	
14.00-14.45	<i>Discussion Paper:</i> From visual perception to sustainable transitions: Contributions of Brunswik's theory of probabilistic functionalism (Roland Scholz) Remarks by Jeryl Mumpower
14.45-15.15	How within-category cue-cue correlations might affect the accuracy of relative weight measures in logistic lens model analyses (Robert Hamm)
15.15-15.45 TEA/COFFEE BREAK	
15.45-16.15	Using representative priors in terrorism risk assessment for individuals: A signal detection framework (Richard John)
16.15-16.45	Taylor-Russell does not equal theory of signal detection (Gary McClelland)
16.45-17.15	Personal tributes to Kenneth R. Hammond (Kathleen L. Mosier, Alex Kirlik)
17.15-17.30	Closing remarks and dinner plans (Jeryl Mumpower & Mandeep Dhami)

**Kenneth R. Hammond's Contributions to
the Study of Judgment and Decision Making**

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Kenneth R. Hammond's influence has been considerable, and we anticipate that it is likely to grow even stronger over the coming years, because his contributions build on a coherent and comprehensive theoretical framework which lay a foundation for the development of a cumulative body of theory and research. Hammond is important for at least nine major contributions, each of which is discussed in the paper. First, Hammond was the single most important contributor to keeping alive the legacy of Egon Brunswik to psychology. Second, he pioneered the study of clinical judgment, which was the precursor of what came to be known as judgment analysis. He was the first to use Brunswik's Lens Model as a framework for studying how individuals use information from the task environment to make clinical judgments. Third, he introduced the Lens Model Equation to the study of judgment making processes. Fourth, he employed the Lens Model Equation in a program of study on multiple-cue probability learning. Fifth, Hammond extended the use of the Lens Model to social contexts in which individuals interacted with one another – introducing both the interpersonal learning and the interpersonal conflict paradigms. Sixth, Hammond was the father of *Social Judgment Theory* (SJT), which integrated the theoretical, empirical, and methodological work based on the Lens Model and Brunswik's probabilistic functionalism. Seventh, grounded in, but going beyond Brunswikian concepts and SJT, Hammond introduced Cognitive Continuum Theory which included the premises that cognition moves on an intuitive-analytical continuum, that quasi-rationality represents a critically important middle-ground on this continuum, and that cognitive tasks exhibit a parallel organization ranging from intuition-inducing to analysis-inducing. Eighth, Hammond's work combined rigorous experimental work with applications and extensions into applied and policy contexts. Although his basic psychological research program was descriptively oriented, he pursued avenues for exploring the implications of that work in prescriptive and normative contexts. Ninth, and finally, Hammond attempted throughout his career, albeit with mixed success, to integrate Brunswikian and SJT perspectives with other normative, prescriptive, and descriptive theories of human decision making. He focused particular attention on drawing out the implications of the dichotomy in psychology between theories of correspondence, which focus on the match with empirical reality, and theories of coherence, which focus on internal consistency.

Confronting Inductive Inference (At Last): Concepts from Aeronautical Engineering Can Lead to Advances in Social Psychology

Zoe Lang & Kenneth R. Hammond

Remarks by
Mike Doherty
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This paper proposes a shift in methodology from that normally used in social psychology to that used in physical sciences, for example aeronautical engineering. Aeronautical engineers faced up to their major problem that of representing flight conditions in land-based experiments, at the beginning of their work. They discovered the Wind Tunnel as the main device for implementing this type of representation. Psychologists have not been so fortunate in their efforts to represent external conditions; they have not been able to find a single device that would be so useful in representing a wide range of conditions specific to their purposes. Even the problem of representation of conditions has not been generally acknowledged. Egon Brunswik's work in "Psychology and the Representative Design of Experiments in Perception" (1956) has been almost completely ignored, if not greeted with hostility. In this paper we have attempted to show the critical problem of representation of conditions within experimentation and how it is resolved by the use of the statistical method, exactly as it has been shown to be the case on the subject side of the experiment.

**Using Ecological Sampling and Representative Design to
Evaluate a Template to Support the Judgment Processes of
Remote Sensing Analysts**

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Ken Hammond emphasized that ecological sampling was a critical aspect of representative design and essential for statements about results generality. These concepts were used to evaluate a template to support the judgment processes of remote sensing analysts. These analysts evaluate sensor data collected by satellites and other platforms to make judgments about potential environmental hazards. Analysts' achievement (five used the template and five didn't) was assessed for six real cases (e.g., has a hurricane caused oil to breach a protective berm?). Each case contained substantial, representative spectral and algorithmic processing data. The results: significantly fewer false positives (saying "yes" when answer "no") and an equivalent, low number of false negatives (saying "no" when answer "yes"), supporting initial generalization about template effectiveness.

Selective Information Sampling and In-group Heterogeneity Effect

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People perceive in-groups as more heterogeneous than out-groups. We propose an information sampling explanation for this effect. We analyze a model in which an agent forms beliefs about groups from her experience. Consistent with evidence from the social sciences, we assume that people are more likely to interact again with in-group members than with out-group members. This implies that people obtain larger samples of information about in-groups than about out-groups. Because estimators of variability tend to be right-skewed, and the skew decreases with sample size, sampled in-group variability will tend to be higher than sampled out-group variability. This implies that even agents that process information correctly will be subject to effect. Our sampling mechanism emphasizes the role of the environment in explaining the effect.

**The Gain of Brunswik-Hammond's Research for Meta-Analysis:
Teachers' Judgment Achievement as an Example**

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This contribution shows the gain of Brunswik-Hammond's research for meta-analysis. To overcome pitfalls of current meta-analysis (e.g., the potential of ecological fallacy), the Brunswik-Hammond's claim for idiographic science is greatly welcomed. It shapes the future of meta-analysis development as more data is available due to technological progress (e.g., online research and data storage). We present an overview on meta-analyses on teacher's judgment achievement which shows the fruitfulness of Brunswik-Hammond's research. Only this approach reveals the underlying factors of teachers' judgment achievement and hence it advanced the field with the question on how to improve teachers' judgment. Brunswik-Hammond's research is relevant and we argue that it will become even more relevant in the future although it is currently seldom considered.

**From Visual Perception to Sustainable Transitions:
Contributions of Brunswik's Theory of Probabilistic Functionalism**

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Coping with the multitude of information, relationships, and dynamics of the biotic and abiotic environment is a fundamental prerequisite for the survival of any organismic system. This holds true, in particular, if we study the sustainable adaptation of human systems to rapidly changing environments. This paper first discusses in what way the Theory of Probabilistic Functionalism (TPF) of Egon Brunswik (1903–1955) provides insight into human–environment interactions and how the organism manages to cope with the complexity of the environment. We identify and discuss seven basic principles of TPF and elaborate why and how they may be applied not only to the individual organism but also to human systems such as (planning) groups or organizations. Second, we show in what way these principles are able to describe human visual perception, which has been Brunswik's main paradigm, from a contemporary perspective. Third, we elaborate whether, why, and how TPF may be used to better describe and understand processes of sustainable transitioning. We discuss how TPF may be applied to describe the utilization of decision theoretic tools and other methods of system representation (e.g., such as Formative Scenario Analysis, System Dynamics), system evaluation (e.g., Multi-Attributive Decision Analysis), and system transformation (e.g., Analytic Mediation) in transdisciplinary processes. Here, the methods function as a medium, i.e., an object in between the environment and a (transdisciplinary) team and its vision of the future. Fourth, we discuss the question of validation of the Brunswikian theory on the level of both perception and sustainable transitioning. The discussion and conclusions reveal that TPF is still a visionary, cue-based approach of human information processing and theoretical approaches to inextricably coupled human–environment systems. TPF may help to overcome the theoretical deficiencies of applied decision sciences or strategic planning in sustainability research. We conclude that the basic principles of TPF relate to organism's strategy of cope with complexity in an ontological sense, and are of the ontological nature of Darwin's laws of evolution.

How Within-Category Cue-Cue Correlations Might Affect the Accuracy of Relative Weight Measures in Logistic Lens Model Analyses

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In medical diagnosis, any particular disease category will be a small minority of patients; for feasibility, lens modelers will want to inflate the proportion of stimulus patients with the disease. The logistic-lens-model equation is appropriate for categorical criteria or judgments. Using a data base of patients with fever, we explored the effects on the ecology model of changing the proportion of stimulus cases with disease, as that interacts with the within-category cue-cue correlations. We'll show differences in cue-cue correlations among the patients with versus without a disease, and the effects upon the regression coefficients of varying the proportion of stimulus patients with the disease. As cue relative weights depend upon regression coefficients, the standard against which judgment is compared might depend on arbitrary stimulus-set-design decisions.

**Using Representative Priors in Terrorism Risk Assessment for Individuals:
A Signal Detection Framework**

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Increasingly Big Data analytics are being utilized to assess the terrorism threat of individuals. Such “risk based” approaches are designed to bin individuals in order to apply differential levels of scrutiny based on individual characteristics related to terrorism threat. We formulate this generic problem in a Signal Detection framework, and conduct sensitivity analysis to determine conditions in which such threat assessments are useful. The usefulness of risk-based approaches depends heavily on priors, indicator diagnosticity, and the relative cost of false-positives and false negatives. Risk-based approaches are severely limited for highly adaptive adversaries who can effectively diminish diagnosticity. The critical importance of using representative priors when assessing accuracy is highlighted.

Taylor-Russell Does Not Equal Theory of Signal Detection

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In Hammond's later work on social policy (e.g., 1996), he emphasized the important concepts of (subtitle of the 1996 book), "irreducible uncertainty, inevitable error, and unavoidable injustice." A key idea is that without unobtainably perfect judgment, two kinds of errors were inevitable in all policy decisions: false positives and false negatives. The rub is that the two types of errors have very different consequences for different people, leading to unavoidable injustice. The decision maker can only allocate these consequences by choice of decision cutoffs. There are two mathematical models for analyzing such decisions in detail: Taylor-Russel (1939) and the Theory of Signal Detection (Tanner, Green, & Swets, 1954). Some researchers (e.g., myself) have assumed they are equivalent. However, a mathematical analysis reveals there are subtle but important differences. This paper elucidates those differences (mostly how they measure judgment accuracy), illustrates the differences using some contemporary datasets for bail decision making, and discusses when one approach or the other might be more appropriate for either theoretical or practical reasons.

Personal Tributes to Kenneth R. Hammond

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Previous New Investigator Award Winners (Interviews)

To remember Kenneth R. Hammond (1917-2015), we interviewed previous new investigator award winners answered following questions:

- a. How, if at all, did the early career award shape your career?
- b. What advice would you give to a young scholar interested in Brunswikian psychological research?

You will find their answer below, ordered by the award year, starting with the latest one.

Jason Beckstead (award year: 2008)

a. In 2008 I was awarded the Early Career Award by the Brunswik Society for my work "A Psychology of Organism-Environment Interactions in Time" in which I showed how time-series models could be applied to data obtained from a single subject in a judgment analysis task (see Beckstead, 2008). To me, receiving the award was proof that there existed a group of knowledgeable peers who are receptive to the kinds of ideas I have about psychology and to the methods I propose for studying these ideas.

Brunswik alluded to the idiographic-nomothetic distinction, namely that 100 measurements all obtained from one subject under different conditions, and 100 measurements each obtained from 100 different subjects under these same conditions, are not equivalent. This point of view has strongly influenced my approach to designing studies; I always keep single-subject analyses in mind. I design studies that enroll several subjects, each of whom provide several responses.

b. To those young scholars interested in Brunswikian psychological research I offer some advice. First, read old stuff. I mean, really old stuff! The original works by Spearman, Thurstone, Brunswik, and others writing 50 to 100 years ago are sometimes quite difficult but well worth the effort. Much of contemporary psychological research involves "rediscovery" of ideas that were put by forth decades ago.

Second, I would advise those who are interested in Brunswikian psychological research to study and work to fully understand statistical methods, most importantly correlation, regression, and factor analysis. Once understood, these become invaluable tools for theory development, model building, and hypothesis testing.

Reference:

Beckstead, J. W. (2008). Modeling sequential context effects in judgment analysis: A time series approach. *Judgment and Decision Making*, 3(7), 570–584.

Julian Marewski (award year: 2007)

a. It actually felt very good to receive this award, which came as a surprise. I cannot say how, exactly, the award shaped my career, but I do know that I always felt very close to the Brunswik society. And I definitely felt very proud of having received their award! Also, in retrospect, I do feel that receiving that award likely was another motivating factor to continue to pursue that research, and the outcome of all of this has then been, a few years later, a Psych Review.

b. I would advise that young researcher to go back to Brunswik's original papers and to read them. To be critical of the ways in which mainstream psychology conducts experimental work. To read the papers – e.g., by Mandeep – on representative experimental design. To read the “Essential Brunswik”. To study the writings of other ecologically-minded scientists, such as Simon or Gibson. To attend meetings of the Brunswik society and other ecologically-minded societies in order to network with and get to know like-minded young scientists. To be stubborn.

Konstantinos V. Katsikopoulos (award year: 2003)

a. The award itself did not shape my career. But it did make me happy and motivated me to keep going back to these meetings. The knowledge and good attitude I got from those meetings—researchers in these meetings have a good honest attitude to work, not trying to show off as is the case in those big conferences—did shape my career, which is now in JDM/behavioural science broadly construed.

b. Read Brunswik! Not other researchers' interpretation of Brunswik—in fact, this holds for all great research; read it in the original—but what the man himself said. Of course it will be a struggle, but it will be worth it. After you have read Brunswik, move on to the wonderful edited volume that Ken Hammond and others put together on Brunswik.

Elise Axelrad, formerly Weaver (award year: 2000)

a. I experienced the early career award as a vote of confidence in my ideas. More importantly, the collegial experience of the meetings I attended at the Brunswik Society and the original mentorship of Ken Hammond in those years inspired me to be a better and more creative scientist. The names that were only authors on papers became real human beings in a community, bouncing ideas around creatively and holding each other to a high standard.

b. Have faith in your sense of what is real and creative in science. There may be fads and fashions, but a core of people with strong creative minds are interested in enduring results at the nexus of mathematics and psychology.

Phil Dunwoody (award year: 1999)

a. The early career award was recognition that my ideas were valued. While that might sound simple, as a young academic it is easy to doubt that what you are doing is of worth, especially if you are more focused on history and philosophy than most people. My interests have tended to be more historical and philosophical than most of my colleagues. This focus was significantly influenced by being a member of the Brunswik Society. Specifically, I received the award while working on Hammond's Cognitive Continuum Theory and presenting on Brunswik's approach as a philosopher of science. Brunswik's critiques about the field of psychology are still intellectually valid.

My work is still heavily informed by Brunswik's evolutionary perspective and the idea that organisms seek to achieve their goals through a variety of means. My work in political psychology now focuses on understanding these goals as reflected in ideology and policy preferences as ways of achieving these goals.

b. Don't be too narrowly focused and consider the big picture. Brunswik was not just a psychologist, but a philosopher of psychological science. His breadth of vision enabled him to question current trends and critique methodological fads. His ideas were all clearly rooted in understanding human behavior from an evolutionary perspective. Psychology today is full of micro-theories because our reward structure promotes the development and naming of "new" theories. Without a unifying framework, our field will continue to be fractured. Viewing human behavior in a way that is consistent with evolutionary theory should be as central to psychology as it is to biology. Always seek to understand how an organism's goals are realized via a variety of means. Always ask if changing the context will change the behavior. Never forget that organisms are embedded in environments and reflect those environments in intimate and complex ways.

Clare Harries (award year: 1998)

a. It was a nice confirmation to carry on doing fun collaborative research. Having it on my cv may have prompted people to ask what it was about, and this leads to other conversations.

b. Read as much as you can. Citing the latest research is great, but building on what was done during the 100 years before that is even better. (Assume that any idea you've had has probably already been done - in the 1920s, 50s and 80s and search out these papers).

- Talk to more experienced researchers and collaborate within and outside your discipline. Don't hesitate to ask questions.

- Never forget the probabilistic nature of the environment and think about what this means in practice in any (judgement and decision making) context.

Mandeep Dhami (award year: 1998)

a. The award recognised my contributions to neo-Brunswikian psychology. I would have continued to work in this area regardless, because it is the right path. But, the award may have helped future employers during my early career appreciate that my theoretical and methodological foundations were substantive.

b. It is important to read and re-read Brunswik's original work. Follow this by reading Hammond's extensions of Brunswik's work. Then, look at modern-day psychology, and you will soon see that it falls short. This means that there is ample room for you to make your mark. Ideas such as the importance of the human-environment fit, measurement of achievement, and representative design still need to be fully exploited. Don't be swayed by 'hot topic's' and fads – stay close to Brunswikian ideas (and ideals) and you will find yourself on a rewarding intellectual journey.

Elke Kurz-Milcke (award year: 1996)

a. To this day, the Award feels like a warm spot to me that signals a sense of belonging. Given the previous recipients, at the time I was rather humbled and still am given also the subsequent. And, of course, to be trusted with Brunswick's copy of the Columbia Bible was very special to me.

On an intellectual level, the award encouraged me to continue the study of Brunswick's ideas and to always also consider new professional interests in the light of these ideas.

b. Advice to a young scholar interested in Brunswikian psychological research is in a sense unnecessary; but generally, I have a piece of old-fashioned advice, which is, to think about sending an old-fashioned letter to those you consider carrying out interesting research, you might receive an answer.

Michael DeKay (award year: 1993)

a and b. The principles are still interesting and useful to me, but I can't say that they have guided my research any more than other good ideas have.

Marlys Gascho Lipe (award year: 1990)

a and b. Winning this award for me was an affirmation and encouragement at a time – early career, prior to publication successes – when this was most needed. Attending the meeting to accept the award was a special experience, with the opportunity to briefly present my work to important people whose research I had read and admired. While I don't know that the award shaped my career in a functional way – that is, by turning my focus in a particular direction – it did provide an extra push and a feeling of having a supportive community behind me, both of which helped me carry on in those early days.

Years later, I taught at the University of Colorado and so was able to observe and interact a bit more with Ken Hammond; he was getting up in years by this point but was still very passionate about his research and the direction psychologists and JDM researchers were headed. It is appropriate for us to honor Ken for his career, his contributions to our science, and his great passion for the work.

To get information about future Newsletters and the Brunswik Society you are welcome to join (free of charge) the email list of the Brunswik Society at:

<http://www.brunswik.org/>